

the time the Vikings started exploring the Americas in about AD 1000. Because Native American populations were decimated after the arrival of the Europeans, the lineage may be missing from contemporary populations. DNA analysis of the remains of ancient Native Americans could provide a more definitive link.

Am. J. Phys. Anthropol. 144, 92–99 (2011)

GLACIOLOGY

Imaging grooves from glaciers

Developments in radar technology have allowed geoscientists to ‘see through’ a Greenland glacier and construct three-dimensional topographic maps of its bed.

Kenneth Jezek of Ohio State University in Columbus and his team used high-resolution radar tomography and synthetic-aperture radar data to measure ice thickness in a region of the Jakobshavn Glacier. They found that as the glacier slides over its bed, it cuts large-scale ridge–groove features into the bedrock that are similar to landforms found on deglaciated terrain. The orientation and dimensions of the grooves suggest that the glacier has been flowing persistently in the same direction.

Understanding past glacier movement and bedrock geomorphology helps researchers to forecast climate-driven changes in the seaward flux of ice sheets.

Geophys. Res. Lett. doi:10.1029/2010GL045519 (2010)

CANCER

Tumours aided by immune cells

Zebrafish cells with the propensity to give rise to tumours behave similarly to wounded tissue, and call for assistance from the immune system. So say Paul Martin at the University of Bristol, UK, and his colleagues, who imagined the interactions

between the cells in real time.

The authors expressed a cancer-associated mutant form of the Ras protein in zebrafish (*Danio rerio*). Because zebrafish larvae are translucent, the team was able to visualize fluorescently labelled immune cells as they responded to the transformed cells.

Cells expressing mutant Ras, and their healthy neighbours, released hydrogen peroxide, attracting immune cells called neutrophils and macrophages, which tethered themselves to the transformed cells. Blocking hydrogen peroxide synthesis — and so the recruitment of the immune cells — slowed the proliferation of transformed cells, suggesting that early immune responses may support tumour development. *PLoS Biol.* 18, e1000562 (2010)

VISION SCIENCE

Man or woman? Depends on view

Whether a face looks like that of a man or a woman depends on the part of the retina on which the image lands.



Eleven volunteers were asked to identify the gender of a series of faces (pictured) presented in one of eight possible visual-field locations relative to a central point. Arash Afraz at the Massachusetts Institute of Technology in Cambridge and his co-workers found that two identical faces were perceived to be of different gender if they were presented simultaneously in specific, different locations. Volunteers’ responses became more consistent across the visual field as the images grew in size.

The researchers think that the perceptual variation may result from the small size of the stimuli relative to that of the receptive field. The small number of brain cells analysing the images at any given location

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NEUROSCIENCE

Better memory with less microRNA

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Learning and memory in mice seem to be enhanced by the loss of small RNA molecules called microRNAs (miRNAs) in the brain.

Witold Konopka at the German Cancer Research Center in Heidelberg and his colleagues deactivated the gene for Dicer, a key enzyme in miRNA synthesis, in forebrain neurons of adult mice. Twelve weeks later, the mice showed improved learning and memory in a behavioural test. This was mirrored by increased numbers of a type of dendritic spine in mutant neurons that is associated with learning. After 20 weeks, however, some of the neurons had degenerated, confirming the importance of microRNAs for neuronal survival.

J. Neurosci. 30, 14835–14842 (2010)

may have varying responses; these are averaged out by a larger image, which stimulates a greater number of cells. *Curr. Biol.* 20, 2112–2116 (2010)

DEVELOPMENTAL BIOLOGY

Immune system emerges in layers

The human immune system develops in waves, the first of which begins even before birth. Fetal and adult T cells originate from different stem-cell populations, allowing the fetal immune system to better tolerate foreign antigens — namely the mother’s.

Joseph McCune at the University of California, San Francisco, and his colleagues compared human fetal blood stem cells and T cells with those of adults. After implantation in mice that permit human blood-cell maturation, fetal stem cells were more likely than adult ones to develop into regulatory T cells. These suppress immune activity, enhancing tolerance to antigens.

Fetal stem cells and T cells also had different gene-expression profiles from the adult versions of these cells. Statistical analysis revealed that developmental stage accounted for most of these differences. *Science* 330, 1695–1699 (2010)

PALAEOANTHROPOLOGY

Neanderthal family tree

Neanderthals living 49,000 years ago may have abided in small clans banded together by their male kin.

Carles Lalueza-Fox at Pompeu Fabra University in Barcelona, Spain, Antonio Rosas at the National Museum of Natural Sciences in Madrid and their colleagues analysed the remains of 12 Neanderthals. They sequenced certain regions of the mitochondrial DNA extracted from fragments of bones and teeth.

The results showed that the group’s three adult males were close relatives, but the three adult females were not. The authors further inferred that an infant and two juveniles were offspring of two of the adult females. The team suggests that the individuals represent a social unit based on patrilocality, in which individuals live with the adult male’s family.

Proc. Natl Acad. Sci. USA doi:10.1073/pnas.1011553108 (2010)

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